

AD A054370

FOR FURTHER ACTION

12

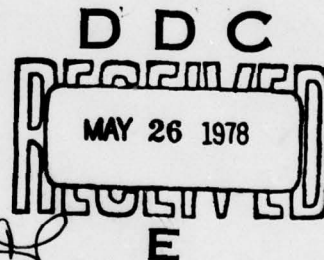
STRATEGIC STUDIES INSTITUTE
US ARMY WAR COLLEGE
CARLISLE BARRACKS, PENNSYLVANIA 17013

10 MAY 1978

ACN78018

DDC FILE COPY

THE CRUISE MISSILE AND THE STRATEGIC BALANCE



MILITARY ISSUES RESEARCH MEMORANDUM

DISTRIBUTION STATEMENT:
Approved for public release;
distribution unlimited.

See room 1473

**STRATEGIC STUDIES INSTITUTE
US ARMY WAR COLLEGE
Carlisle Barracks, Pennsylvania**

**THE CRUISE MISSILE AND
THE STRATEGIC BALANCE**

by

Robert Kennedy

10 May 1978

DISTRIBUTION STATEMENT:
Approved for public release;
distribution unlimited.

DISCLAIMER

The views of the author do not purport to reflect the position of the Department of the Army or Department of Defense or any other agency of the US Government.

BIOGRAPHICAL SKETCH OF THE AUTHOR

DR. ROBERT KENNEDY joined the Strategic Studies Institute in 1974. A graduate of the US Air Force Academy, Dr. Kennedy completed his graduate work in political science at Georgetown University. Dr. Kennedy served on active duty briefly with the Army and then with the Air Force from 1958 to 1971 and is currently a reserve officer. Prior to his present position, he was foreign affairs officer, US Army Control and Disarmament Agency.

ACCESSION for		
NTIS	White Section	<input checked="" type="checkbox"/>
DDG	Buff Section	<input type="checkbox"/>
UNANNOUNCED		<input type="checkbox"/>
JUSTIFICATION.....		
BY.....		
DISTRIBUTION/AVAILABILITY CODES		
Dist.	AVAIL. and/or SPECIAL	
A		

FOREWORD

This memorandum considers both sides of the discussion on the US acquisition of a cruise missile system and delineates the criteria on which the acquisition should be based. The author affirms that when criteria such as sufficiency, stability, cost and the impact on regional, theater and sea control forces are considered, it becomes evident that there is no immediate need for a long-range strategic version of the cruise missile, but that shorter range tactical nuclear and conventional versions promise to be highly valuable. However, he concludes that, despite the current lack of need for long-range cruise missiles, the United States should not foreclose on options to produce such missiles in the future.

The Military Issues Research Memoranda program of the Strategic Studies Institute, US Army War College, provides a means for timely dissemination of analytical papers which are not necessarily constrained by format or conformity with institutional policy. These memoranda are prepared on subjects of current importance in areas related to the author's professional work or interests.

This memorandum was prepared as a contribution to the field of national security research and study. As such, it does not reflect the official view of the College, the Department of the Army, or the Department of Defense.



ROBERT G. YERKS
Major General, USA
Commandant

THE CRUISE MISSILE AND THE STRATEGIC BALANCE

In an age when US intercontinental ballistic missiles (ICBM's) are on the verge of becoming vulnerable to a Soviet preemptive first strike, when the balance of strategic nuclear capabilities appears to be shifting more and more in favor of the Soviet Union, and when only costly alternative courses of action seem to be available to the United States as a means of preserving the survivability of its retaliatory forces and the existing strategic balance, a product of modern technology has emerged. That product—a weapons system small in size, potentially mobile, highly accurate, and relatively inexpensive has become known as the "cruise missile."¹

The idea of a nonballistic, long-range, air-breathing missile, however, is not new. During World War II the Germans used V-1 "buzz bombs" to terrify the English. Immediately after the war the US Navy initiated the design of the submarine-carried and surface-launched Regulus I cruise missile. By the late 1950's the United States had developed several nuclear armed cruise missiles, including the Matador and the submarine-launched, supersonic Regulus II. By 1958, the US Air Force had activated its first intercontinental-range cruise missile system, the Snark.²

Improvements in air defense and ballistic missile technology, however, presaged the demise of these early versions of a "strategic" cruise missile. While the Air Force continued to pursue the development and deployment of air-launched standoff air-to-surface weapons and unarmed decoys such as the "Hound Dog" and the "Quail" and continued to show an interest in drone and Remotely Piloted Vehicles (RPV) for a variety of applications, large, high altitude, nonmaneuvering, easily detected intercontinental cruise missiles³ came to be viewed as highly vulnerable to improving Soviet surface-to-air (SAM) defense network. As a result "strategic" cruise missiles were seen as a less attractive alternative than the more accurate and less vulnerable manned bombers and intercontinental ballistic missiles (ICBM's).

In recent years, the United States has reopened development of its strategic cruise missile program. Advances in guidance technologies, miniaturization of electronics, improvements in small turbine engine design, and the advent of high energy/heavy hydrocarbon fuels have made it possible to produce relatively small, highly accurate missiles capable of transiting great distances. At a time when Soviet technological advances in missile accuracy and warhead design appear to be threatening a decline in the survivability of our strategic retaliatory forces, the cruise missile has been considered a relatively inexpensive⁴ means not only of complementing the manned bomber and enhancing its penetration of advanced threat environments, but also of providing an invulnerable reserve force which could be launched from a wide variety of surface and subsurface platforms.

Dr. Malcolm Currie, former Director of Defense Research and Engineering, in testimony before Congress argued that the cruise missile can contribute to a more efficient utilization of bomber/tanker assets by acting as an extension of the launching platform in order to destroy outlying and isolated targets. The fuel saved by employing such an extension can then be converted into higher payloads or an increase in endurance at low altitudes which would reduce the vulnerability of the bomber during the penetration phase. Moreover, he has contended that in the process of executing their attack, cruise missiles provide a "bonus" to the penetrating bomber force engaged in attacking numerous defended aim points. The "bonus" is the dilution and decoy effect resulting from the operation of many hundreds of vehicles in the enemy air defense net to the obvious benefit of bomber survivability.⁵

Other Defense Department witnesses have testified that, because of its adaptability and versatility, the cruise missile can be launched from a

wide variety of platforms and could be called on to perform a wide variety of tasks. It can be deployed on aircraft, surface ships and submarines. Moreover, it can be placed on land mobile launchers. As such it could constitute an almost invulnerable strategic deterrent, reserve force. Furthermore, it could be called on to conduct a wide variety of nuclear options, thus, adding a real margin of flexibility at the strategic and theater levels.⁶ Dr. Currie has suggested, "... to the degree that they contribute to a credible deterrent, an impregnable defense, they have a stabilizing effect."⁷

On the other hand, critics have argued that not only is there no objective need for a strategic cruise missile, but also its acquisition is strategically destabilizing and likely to result in a net long term disadvantage to the United States.⁸ First, such critics contend that the United States and the Soviet Union already have forces sufficient to deter one another from a strategic attack. They, therefore, conclude that it would be pointless and costly to add new kinds of weapons to existing inventories. Townsend Hoopes, former Under Secretary of the Air Force, has argued that

Large-scale overkill exists in the nuclear stockpiles on both sides. No one needs any more new or marvelous instruments of destruction.⁹

In like manner Thomas Halsted, former Executive Director of the Arms Control Association, has contended that

We and the Soviet Union, with our existing forces are deterred from attacking each other already; adding new kinds of weapons such as cruise missiles to enhance deterrence is pointless and costly.¹⁰

Second, even if such weapons were required, they would be vulnerable to advances in Soviet air defenses. The opposition has been quick to note that the Soviet Union possesses a substantial air defense network which could be a useful, even if not totally effective, means of neutralizing a cruise missile attack.¹¹ They point out that even Defense Department witnesses have recognized the vulnerability of the cruise missile to targets defended by "high quality terminal surface-to-air missile units."¹²

Third, critics believe that acquisition of a strategic cruise missile force would enormously complicate the verification problem and that, in the absence of a verifiable arms control agreement, SALT limitations would be a "joke." They point out that, through national technical means,¹³ it is impossible not only to distinguish an unarmed, or

conventionally armed from a nuclear cruise missile, but also to differentiate between "strategic" and "tactical" variants.¹⁴ Since neither the United States nor the Soviet Union are likely to permit intrusive inspection, numbers and types of cruise missiles are, therefore, likely to remain unverifiable in the foreseeable future. Moreover, because the cruise missile can be employed on a wide variety of vehicles, the potential for a proliferation of these weapons is enormous. As Halsted has emphasized, "We could have as many as 11,000 air-launched, and 10,000 sea-launched cruise missiles. Compared to these numbers, the Vladivostok ceilings of 2,400 strategic launchers . . . allowable on each side look ridiculously low."¹⁵ Hence, critics conclude that acquisition of the cruise missile will be strategically destabilizing.

Finally, it is held that, it is by no means clear that in a cruise missile arms race between the United States and the Soviet Union, the United States would be the net winner. Critics note that the Soviet Union has a greater number of submarines, a growing surface fleet, and a large number of medium and long-range bombers which could serve as launching platforms for nuclear armed "strategic" cruise missiles. Furthermore, they contend that during the penetration phase, cruise missiles are potentially vulnerable to sophisticated air defenses. At the present time, the United States has virtually no air defense capability against a large scale cruise missile attack. On the other hand, the Soviet Union has a well-developed and integrated surface-to-air (SAM) and antiaircraft artillery (AAA) network which could serve as the basis for a potentially effective cruise missile defense. Finally, the United States has more targets which are close to the coastline and, hence, is potentially more vulnerable to current and near future generation cruise missiles launched from standoff airborne or naval platforms.¹⁶

What has been absent from both sides of the discussion on the cruise missile has been a clear delineation of the criteria upon which the acquisition of "strategic" nuclear systems should be based, followed by an uncluttered assessment of the need for "strategic" cruise missiles based on the strengths and projected vulnerabilities of the current TRIAD of strategic forces and the impact the acquisition of the cruise missile is likely to have in offsetting TRIAD vulnerabilities and preserving the strategic balance.

CRITERIA FOR ASSESSMENT

Acquisition of strategic systems should be based on an assessment of

the relative effect such systems are likely to have on the overall US worldwide strategic posture. As a minimum such an assessment should take into consideration four fundamental parameters of the strategic equation.

First, strategic sufficiency: US forces should be sufficient not only to deter limited and/or general nuclear war, but also, to preclude the USSR from reaping a foreign policy advantage as a result of third nation perceptions of a relative US strategic military weakness. To such an end US strategic forces must be able to (1) survive a limited or general Soviet counterforce first strike; (2) penetrate Soviet defenses; (3) conduct limited options in support of a favorable early termination of conflict; and, as a last resort, (4) inflict a level of damage on the Soviet political and economic infrastructure and residual military capabilities (including reusable ballistic missile silos and bomber forces) which would clearly be perceived by Soviet leaders as a cost in excess of any conceivable benefit to be derived from actions likely to lead to a strategic exchange.

Second, strategic stability: US strategic forces should contribute to crises stability. The capabilities or limitations of such forces should in no way provide an incentive for either side to launch a disarming first strike or permit either side to launch a limited nuclear attack with impunity. Moreover, such forces should permit responses to limited attacks that serve to suppress rather than foster incentives to escalate.

Third, resource conservation: the fundamental task is to minimize cost (capital, material, human) in order to free resources for other necessary defense and nondefense sector requirements while maintaining sufficiency and stability at the strategic level and flexibility at all other levels of potential competition/conflict.

Finally, decisions guiding the acquisition on negotiated limitation of US strategic nuclear weapon systems should take into consideration the effect such systems are likely to have on US regional, theater and sea-control/general purpose forces—a parameter often overlooked in a world still haunted by the awesome specter of nuclear holocaust brought on during the cold war. Nevertheless, in today's environment, which has come to be characterized by a reasonably high level of strategic stability, the real competitions between the United States and the Soviet Union for influence in the international arena are likely to take place at levels other than the strategic nuclear. In such an environment, such forces as those mentioned above, which are charged with supporting US political, diplomatic, and military initiatives in

defense of national interests in peacetime and during conflicts of lesser magnitude than a strategic nuclear exchange, are likely to be of paramount importance.

Within the framework established by these parameters it is possible not only to appraise the strengths and weaknesses of the current US strategic nuclear arsenal, but also to assess in a systematic manner the contribution cruise missiles are likely to make in terms of offsetting current and foreseeable future deficiencies in US strategic forces and enhancing the overall US worldwide strategic posture. First, let us turn to an assessment of the relative strengths and weaknesses in the current generation of US strategic forces.

INTERCONTINENTAL BALLISTIC MISSILES (ICBM's)

There is ample evidence to suggest that the *present* generation of US ICBM's is not only sufficient in the sense outlined above, but also strategically stabilizing and cost effective. Given the *current* hard target counterforce capability of Soviet ICBM's and the negotiated limitations on ballistic missile defense, it is likely that a large portion of the US ICBM force not only would be able to survive a Soviet first strike, but also would be capable of penetrating Soviet defenses in order to inflict a high level of damage on the Soviet urban-industrial complex. The US ICBM force is also sufficiently accurate and responsive to conduct, in a qualified manner, some measured time-urgent counterforce options in support of limited or general war or theater nuclear operations. Furthermore, the reliability and relative security of the ICBM command, control, and communications (C³) net and the inherent security from sabotage of systems housed in hardened and underground silos and located in well-guarded launch sites when coupled with the aforementioned ability to survive, penetrate, and deliver an assured retaliatory blow combine to enhance strategic stability. Finally, the current generation of ICBM's is relatively inexpensive to maintain. While a high percentage of the cost of any strategic system is usually associated with its research and development and initial acquisition phases rather than with system operation and maintenance, the silo-housed "static" nature of the ICBM force makes it the least expensive of the TRIAD of strategic forces to maintain.

On the other hand, the short time-of-flight from launch to impact and the inability to recall an ICBM force once launched could contribute to instability in certain crises situations. For example, in a

severe crisis, one or the other of the superpowers, when confronted with the possibility of a strategic nuclear first strike, might be tempted to launch a preemptive strike of its own. Since the short time-of-flight of ICBM's promises only a short period of warning, it might appear to be wise to attempt to destroy the bulk of an opponent's strategic nuclear forces before they were launched, rather than chance sustaining the heavy losses to one's own forces which would likely result from a first strike by an opponent's short warning time ICBM forces.

Furthermore, the advent of strategic parity between the superpowers has served to limit the utility of the US ICBM force as a deterrent to theater aggression. No longer can the United States rely on the threat of massive retaliation to deter regional aggression. Nevertheless, ICBM's can be used, if required, to support theater nuclear warfare. In light of the SALT I numerical limitations, however, the number of ICBM's which can be allocated for theater use is circumscribed by a prudence which requires that a certain number be retained to deter or conduct a general nuclear war.

In a sense, the ICBM force is currently the mainstay of the US strategic nuclear capability. It is the only force capable of reliably conducting a full range of time-urgent responses, while hardened silos render it essentially invulnerable to a Soviet preemptive strike. The ICBM, however, is likely to become more vulnerable to a Soviet counterforce first strike as continued Soviet technological improvements in ballistic missile guidance and multiple independent reentry vehicles (MIRV's) permit the USSR to combine their current throw-weight advantage with accuracy.

BOMBERS

Given adequate warning time, bombers are, perhaps, the most survivable, most flexible, and most stabilizing element of the strategic TRIAD. First, with warning bombers can be dispersed and placed on airborne or runway alert. Given current and projected technologies, aircraft on airborne alert are likely to remain virtually invulnerable to a preemptive strike, while aircraft that have been well dispersed on ground alert seriously complicate Soviet counterforce targeting.

Secondly, the present generation of bombers with the "man-in-the-loop" operating electronic countermeasures (ECM) equipment is likely to be able to penetrate the Soviet air defense network with acceptable losses well into the 1980's.¹⁷ Once having

penetrated enemy defenses, bombers offer a high degree of flexibility. They not only are capable of striking targets of opportunity, providing post strike reconnaissance, and destroying Soviet residual military capabilities (including hardened targets such as the current generation of reusable ICBM silos); but also they are currently capable of inflicting a crippling level of damage on the Soviet urban-industrial base.¹⁸

Third, bombers are perhaps the most stabilizing element of the TRIAD. The number of bombers can be ascertained through national technical means. Hence, arms control agreements, which limit the number of bombers, can be verified. Bombers can be launched on warning and recalled. Furthermore, their long time of flight provides warning to the other side and therefore, practically speaking, precludes their use in a first strike counterforce attack. Hence, in an age of rapid communications and sophisticated warning systems, the bomber contributes little, if indeed at all, to pressures for preemption during severe crises.

Finally, strategic bombers add to the total deterrent and defensive potential of US regional forces. They can be employed to support theater or regional conventional and nuclear conflicts. However, like ICBM's, their use in such cases is somewhat restricted by the requirement to retain an adequate strategic retaliatory capability. Of course, "adequacy" in this sense, in part, is a function of the nature of the crisis and the intensity of Soviet involvement in the conflict. Hence, while it is possible to use bombers to a considerable extent in support of conflicts like Vietnam, where a US-Soviet nuclear confrontation is unlikely, such use may not be as prudent in support of a conventional conflict in such places as Western Europe or perhaps the Middle East where strategic assets would be necessary to deter conflict escalation.

On the other hand, bombers and their supporting tankers not only are likely to remain vulnerable to a Soviet no-warning, "bolt out of the blue" first strike, no matter how improbable such a strike may be; but also, they are likely to become increasingly vulnerable to attack as a result of shortened warning should the Soviets decide to develop and deploy depressed trajectory SLBM's.

Furthermore, the present generation of strategic bombers is a product of 1950's technology. The first B-52 rolled off the assembly line in 1952. While a number of modifications have been made since that time to enhance the ability of the B-52 to survive and penetrate enemy defenses, a number of deficiencies remain. The B-52's are highly susceptible to the effects of nuclear weapons. They are not able to

withstand nuclear near misses nor are they likely to be able to escape safely from an airfield under attack. They have a large radar cross-section and technologically obsolescent electronic countermeasures equipment. As a result, foreseeable improvements in Soviet air defense electronic counter-countermeasures are likely to seriously threaten the ability of the B-52 to penetrate to the target. They have a heavy "footprint"; that is: their weight is distributed over a small section of the runway, and they have a long take-off roll. Both deficiencies tend to limit the number of airfields to which they can be dispersed during crises. Moreover, the B-52 airframe is aging. If the United States is to have a bomber fleet capable of operating into the 1990's and beyond at high speeds and low altitudes, the airframe will require extensive modifications or replacements. In either case, continued maintenance of a manned bomber fleet will involve considerable costs.

SUBMARINE LAUNCHED BALLISTIC MISSILES (SLBM's)

Given the current state of the art and likely near future technological advances in antisubmarine warfare (ASW), the present generation SLBM force is likely to remain highly invulnerable to preemptive attack yet capable of penetrating Soviet defenses. However, SLBM's are neither sufficiently accurate to be a reliable means of conducting hard target counterforce retaliatory strikes against such targets as reloadable silos, nor, in some cases, sufficiently responsive to be a useful means of executing limited options which demand an immediate response. Nevertheless, the SLBM fleet's relative invulnerability contributes significantly to crises stability.

SLBM's can also be used to support theater conflicts—a number are currently dedicated for use in the event of conflict in Western Europe. Hence, SLBM's add to the total deterrent and defensive potential of US theater and regional force. As with the ICBM, their use is somewhat restricted by the necessity to maintain an adequate strategic retaliatory capability. Unlike strategic bombers, however, SLBM's, while serving to deter conventional aggression where escalation is likely to result in the use of nuclear weapons, have only a nuclear role once deterrence to conventional aggression has failed.

Perhaps, the single most significant disadvantage of SLBM's is cost. Ballistic missile submarines are not only relatively expensive to construct but also are costly to maintain.

ASSESSING THE NEED FOR A CRUISE MISSILE

Cruise missiles would appear to be an ill-suited replacement for ICBM's for a variety of reasons. Among the more obvious, of course, is the fact that current generation cruise missiles lack the intercontinental range for strikes on the Soviet Union from the security of bases located within the United States.¹⁹ However, even if intercontinental ranges could be achieved, highly mobile intercontinental range cruise missiles would be less secure in terms of C³ and more vulnerable to sabotage than the current generation of silo-housed ICBM's.²⁰ Moreover, cruise missiles are not likely to carry a payload sufficient to strike hardened targets deep within the Soviet Union within the foreseeable future,²¹ would be more vulnerable than are ICBM's during the penetration phase,²² and if deployed in a highly land mobile configuration would make verification virtually impossible, thus arms control agreements would become an almost totally unreliable means of limiting the arms race and in turn reducing arms costs.

The most significant fact which lobbies against developing intercontinental cruise missiles as a replacement for the current generation of ICBM's, however, is the loss in the ability to execute those limited or general war options which might require an immediate response. At present the ICBM's are perhaps the only force which can be called on at any moment to execute such options. Loss of this capability would not only jeopardize the sufficiency of US strategic forces, but also be strategically destabilizing.

A cruise missile/airborne standoff carrier could be employed as a substitute for the manned penetrating bomber. Such an employment mode would retain some of the flexibility of the manned bomber. However, if a force of such carriers were designed for surface and airborne alert including rapid takeoff and safe escape from under nuclear attack, it would likely be at least as expensive as the cancelled B-1.²³ Without such a capability a cruise missile standoff carrier force would be more vulnerable to a Soviet preemptive attack than the B-1. Moreover, the strengths (such as the ability to take high speed evasive action and employ ECM to avoid, counter, and confuse Soviet fighter and surface-to-air missile defenses), which are inherent in a manned bomber, would be lost. Furthermore, no claims are made for even advanced prototypes concerning a capability which would match the manned bomber in its ability to strike secondary and tertiary targets and targets of opportunity in lieu of primary targets which already may have been destroyed.

Cruise missiles, however, could be successfully employed to enhance the penetrability and extend the range of the manned bomber. Cruise missiles designed to project radar images similar to those of the manned bomber could be used to draw SAM fires and dilute defenses. They could also be used to strike the air defenses themselves or as an extension of the launching platform in order to destroy outlying and isolated targets. Moreover, cruise missiles employed on bombers would obviate the need for verification, since the bombers themselves can be verified and their maximum cruise missile capacity ascertained.

There has been no serious suggestion that strategic cruise missiles be employed as a replacement for SLBM's. The high probability of a continued relative invulnerability of the SLBM fleet has insured a continuing confidence in the sea-launched ballistic missile leg of the TRIAD. On the other hand, it has been suggested that cruise missiles could be used to augment the current fleet of seaborne ballistic missiles by placing them on attack submarines and surface vessels. As critics have noted, however, the placement of strategic cruise missiles, whose targets have been integrated into the strategic operations plan, on attack submarines and surface ships would detract from the primary missions of such vessels.²⁴ This would be especially true if large scale nuclear conflict were preceded by intensive conventional or limited nuclear exchanges. Under such circumstances attack submarines and surface ships withheld from action and reserved as a deterrent to strategic conflict would not be available to support sea control actions. Moreover, since ballistic missile submarines are the least vulnerable leg of the strategic TRIAD and likely to remain so into the foreseeable future, there is no current need to augment that leg of the TRIAD with cruise missiles placed on nonballistic missile subs and surface vessels. Furthermore, the placement of cruise missiles on surface ships and submarines would make it virtually impossible to verify numbers and, in turn, achieve some meaningful numerical limitations through arms control negotiations.

Conceivably, as each leg of the TRIAD becomes more vulnerable to a Soviet first strike, the current TRIAD could be converted to a "quadrad" by adding a fourth leg of cruise missiles stationed on land and/or at sea. Such a leg could serve as an independent strategic force or as a strategic reserve. As an independent force stationed on land, sea, or air, however, cruise missiles would be subject to the limitations mentioned in the above assessments of the value of a cruise missile system as a replacement for ICBM's, SLBM's, and bombers. On the

other hand, as a strategic reserve, a cruise missile force would need to be rapidly retargetable. Such a requirement not only would entail a tight integration into the post-strike C³ net so that targets which have not been eliminated because of weapons system failures, losses on the ground or during penetration, and the like could be passed to the cruise missile force, but also would involve the physical retargeting of the missiles themselves.²⁵ However, while such a force could only be targeted against nontime-urgent targets, it might provide a substantial additional measure of deterrence against strategic nuclear conflict and interwar escalation by adding to the nuclear warfighting capability of the United States (or as a minimum it might offset expected losses due to growing vulnerabilities of the other legs of the strategic TRIAD).

From the above discussion, it would appear that the bounds of "strategic" utility of the cruise missile have been narrowly circumscribed by limitations of existing technology. Its long time to target, its lack of flexibility once in the target area, and other drawbacks noted above render it an ill-suited replacement for any of the three legs of the TRIAD or as an independent strategic force. On the other hand, it could be employed successfully to enhance the bomber and/or as a strategic reserve subject to the above mentioned constraints.

Perhaps the greatest value of the cruise missile, however, results not from its use as a strategic system, but from its utility as a tactical weapons system. As a tactical system, cruise missiles can be employed in a wide variety of roles such as:

- intelligence collection.
- satellite relay.
- emitter location.
- deep and shallow nuclear and nonnuclear interdiction.
- target and weather reconnaissance.
- sensor emplacement and monitoring.
- an AWACS extension.
- SLBM detection and destruction.
- ocean and battlefield surveillance.
- data dissemination.
- battlefield communication.
- sea control.
- coastal bombardment.
- target designation.
- defense suppression.

- electronic countermeasures (decoy, jammer, chaff, etc.)
- battle damage assessment.
- search and rescue.

In such roles the cruise missile could significantly enhance US regional and theater nuclear and conventional postures and would add measurably its ability to control selected parts of the world's oceans and seas during times of limited conflict. Thus, the technological advantage which the United States possesses in cruise missiles while having only a limited, although perhaps in the long run very significant, effect on the balance of strategic nuclear forces, would have a substantial impact on those forces upon which the US ability to project its influence abroad is largely dependent.

THE SALT CONNECTION

If calculations concerning the utility of the cruise missile weapons system were the only determinants of decisions regarding its procurement, one might conclude from the discussion above that the *United States ought simply embark on the acquisition of a limited number of cruise missiles to enhance its strategic deterrent posture while placing major emphasis on acquiring those "tactical" weapons likely to enhance significantly its worldwide peacetime posture.* However, in an environment where the superpowers have embarked upon what appears to be a serious attempt to manage "strategic" arsenals, in order to enhance stability at the strategic nuclear level, one must first ascertain the effect an unbridled weapons acquisition program is likely to have on efforts to limit strategic armaments.

Cruise missile critics contend that failure to achieve some limitation on such systems may seriously threaten current and future strategic arms control agreements from at least two perspectives. First, the Soviets may refuse to sign any agreement on strategic arms limitations which does not restrict the cruise missile. To date the Soviet Union has remained steadfast in its refusal to reach a SALT accommodation which does not restrict the cruise missile. They have accused the United States of "a desire to step up the arms race" by seeking to deploy a new weapon.²⁶ Critics note that in the absence of a new accord, the Soviet Union might choose to expand its ICBM and SLBM forces thereby threatening the current state of strategic parity.

On the other hand, there are those who contend that limitations on the cruise missile could be used as a "bargaining chip" in securing some

limitations on forces which currently favor the USSR (e.g., throw weight, missile size, etc.). Moreover, in theory, at least, there is some finite limit on the number of survivable weapons required for an assured destruction retaliatory capability beyond which further acquisitions are subject to the law of diminishing returns. If, practically speaking, such is the case, we may be entering an era where the survivability of strategic weapons systems obviates the need for SALT limitations.

Secondly, critics contend that failure to achieve some limitations on the strategic cruise missile could prove to be "crisis" destabilizing. Without an agreement which limits the numbers of strategic cruise missiles, it may be possible, as accuracies improve, for either superpower to dedicate the major portion of its present array of strategic forces to a counterforce first strike while withholding its strategic cruise missiles in reserve in order to force negotiations by threatening a countervalue strike in order to prevent the other side from responding with a retaliatory assured destruction strike. Such a situation may well lead to another spiraling arms race as each side seeks to offset advantages perceived as accruing to its opponent as a result of strategic cruise missile acquisitions.

On the other hand, proponents contend that to the extent that highly mobile cruise missiles are themselves invulnerable to a counterforce attack and thus enhance the invulnerability of each side's strategic retaliatory forces, they would enhance crisis stability by assuring that neither side could conduct a totally effective counterforce first strike. Moreover, they note that the long time of flight of the cruise missile makes its use as a counterforce first strike weapon highly unlikely.

If one is inevitably drawn, however, to the conclusion that some form of limitation should be negotiated with regard to the cruise missile (if for no other reason than to insure the perpetuation of the current strategic balance at the lowest possible cost), a number of factors operate to the detriment of negotiated limitations. First, the USSR already has a wide variety of subsonic and transonic air and surface launched nuclear and conventional cruise missiles with ranges up to 550 NM and they are developing supersonic versions.²⁷ Secondly, the United States, in addition to such vehicles as the Hound Dog and the SRAM, which were developed for strategic uses, has a number of unmanned, self-propelled airbreathing, guided vehicles which have been developed for reconnaissance and other tactical missions. Third, it does

not appear to be possible to distinguish tactical from strategic variants of the cruise missile through national technical means. Hence, while it may be possible to verify a complete ban on all cruise missiles, such a ban is not necessarily desirable, because of its impact on tactical uses; nor is such a ban likely, since both the United States and USSR consider cruise missiles currently in their inventories as an integral part of their tactical (and in some cases strategic) forces. It would seem, therefore, that the task (if some restraint of the cruise missile in the SALT context is desired) is to fashion a limited ban on cruise missiles which is verifiable and would restrict their employment for strategic purposes while permitting their continued use for tactical purposes.

Given advances in fuels and engine technologies and electronic component miniaturization currently considered within the state of the art, Soviet cruise missiles are of sufficient size to be extended in range (as the Soviet Union acquires such technologies) by several orders of magnitude. Therefore, while it may be possible to secure a limitation on cruise missiles based on range only, such a limitation would be virtually impossible to verify except within wide limits.²⁸ Moreover, range limitations would have an unequal effect on the United States and the USSR. Given the relative numerical and technical superiority of the US bomber force, a 600 km limit on air-launched cruise missiles would tend to benefit the United States more than the Soviet Union. On the other hand, given the size of the Soviet fleet and the proximity to the coast line of major US urban-industrial complexes, a similar restriction on sea-launched cruise missiles would operate in favor of the Soviet Union. However, it is uncertain that the unequal effects are mutually cancelling. Since a sizable number of cruise missiles could only be carried as a substitute for gravity bombs in bombers, such a limitation as noted above would have only a limited effect in enhancing the number of weapons delivered by a US bomber force. Whereas cruise missiles, if permitted on surface ships and submarines, in many cases could result in a significant increase in the total warheads available for use on strategic targets by the Soviet Union.

TOWARD SOLVING THE CRUISE MISSILE DILEMMA

Suggestions relating to the cruise missile have ranged from advocacy of a complete ban to arguments for its unrestricted deployment. It would appear, however, that despite the potential military advantages, relating to cruise missile acquisition, the instability at the strategic level

likely to result from the unchecked deployment of cruise missiles would warrant a concerted effort by both the United States and the Soviet Union to achieve some arms control agreement. Moreover, within the bounds of the above mentioned potential strategic and tactical advantages and the constraints which serve to circumscribe the likely limits of any agreement, it would appear that some movement toward cruise missile limitations can be made.

One promising alternative is to seek a 5 year ban on the development of air, sea, and land launched "strategic" cruise missiles with ranges of over 1500 to 2000 NM. As a limited guard against cheating, the ban could include a clause which restricts deployment of cruise missiles over a certain volume. Assuming some knowledge of the state of the art, both sides would be capable of assessing the maximum range/payload tradeoffs if one side were believed to be violating the range limitation aspect of the agreement.

Such a ban would permit the continued development of tactical cruise missiles of lesser ranges, including tactical nuclear cruise missiles positioned in Western Europe to deter, and if necessary, support a tactical nuclear conflict in Europe. These missiles could be positioned well aft of the FEBA, ideally outside the NATO guidelines area,²⁹ in a highly mobile configuration. Cruise missiles so deployed not only could serve to free tactical air assets currently tasked to support theater nuclear warfare in order to enhance the conventional deterrent and defense, but also would serve to offset the massive Soviet investment in MR and IRBM's.

Moreover, such a limited ban on cruise missiles would have an approximately equal effect on increasing the vulnerability of both the United States and the USSR to a strategic cruise missile attack. While a large portion of the United States would be vulnerable to Soviet air and sea-launched missiles, including those launched from the Backfire bomber (whose range could be significantly extended should the Soviets opt to equip it with air-launched strategic cruise missiles), a significant portion of the Soviet Union would also be vulnerable to US air and sea-launched cruise missiles and land-launched missiles based in Western Europe. As noted above, at lesser ranges the United States would be significantly more vulnerable to a strategic cruise missile attack than would the USSR.

Furthermore, within the confines of such a ban the United States would be able to deploy cruise missiles in order to significantly enhance the range and recoverability of the bomber fleet. In many instances the current range limitations imposed by low altitude flight force recovery

of the current generation of bombers at bases on the periphery of the Soviet Union. In a general nuclear conflict it is unlikely that the USSR would fail to destroy such bases and thus permit the successful recovery and reconstitution of the US bomber force. By extending the range of the bomber through the use of cruise missiles, in some cases bombers may be able to recover at bases more distant from the Soviet Union.

In addition to a limited ban on strategic cruise missiles, it would now seem appropriate to seek to convene, in the near future, negotiations designed to set limits on tactical weaponry in order to stem the developing tactical arms race between the United States and the USSR. Such negotiations might deal with cruise missiles of less than 2000 NM range and with forward base systems (FBS) including tactical aircraft, MR/IRBM's, and battlefield nuclear systems stationed in Europe or systems capable of striking targets in Europe from their current locations. Eventually such negotiations might be expanded to include other nations who have developed or are in the process of developing and/or deploying weapons which might threaten stability at the strategic nuclear level.

SUMMARY

The term cruise missile defines in a generic sense an entire family of weapons which are from strategic nuclear to tactical nonnuclear. Nevertheless, it is possible to assess the impact such cruise missile systems as are currently envisaged are likely to have on offsetting TRIAD vulnerabilities and preserving the strategic balance. Such an assessment, however, must take into consideration not only the present, but also future requirements.

Given the current strengths and weaknesses of the US TRIAD of strategic forces it would appear that the TRIAD is likely to remain sufficient in the immediate future not only to deter limited and/or general nuclear war, but also to preclude the USSR from reaping a foreign policy advantage as a result of third nation perceptions of the relative capabilities of the United States and the USSR. The US TRIAD will be able to survive a Soviet first strike (including one which is augmented by cruise missiles) and to penetrate to inflict unacceptable damage. Hence, acquisition of a strategic nuclear version of the cruise missile is not likely to alter in any significant manner the current US-USSR balance of strategic nuclear forces.

On the other hand, any contemplated restraints on the development

and acquisition of the cruise missile must be evaluated in terms of their likely effect on tactical applications which, in an important and immediate sense, might weigh heavily on the US worldwide "strategic" posture. The high utility of "tactical" cruise missiles coupled with the inability to distinguish the "tactical" from the "strategic" would appear to make it inadvisable to enter into a SALT agreement which would unduly affect the development and acquisition of cruise missiles for tactical uses.

Given current trends in Soviet counterforce capabilities and the threats they portend for the future force survivability, however, it appears necessary to take steps now to insure the future sufficiency of US strategic nuclear forces. Such steps should include negotiations calculated to achieve qualitative as well as quantitative limitations on strategic forces. Through qualitative restrictions it may be possible to preserve the survivability of current strategic nuclear forces (which serves to underwrite strategic sufficiency and is essential for crisis stability) without embarking on major new strategic programs designed to enhance the survivability and penetrability of strategic forces.

On the other hand, failure to achieve an agreement on the qualitative aspects of strategic armaments *may make it necessary* for the United States to acquire long-range "strategic" cruise missiles. While other force modifications and improvements (such as the MX ICBM) might be able to arrest any projected decline in the sufficiency of the US strategic force posture, strategic cruise missiles promise to be, potentially, the least costly option. Such missiles could be used to improve the penetrability and target coverage of the bomber force, to offset the growing vulnerabilities of the TRIAD, or as a highly mobile (ergo, highly survivable) reserve force capable of assuring the Soviet Union of its own ultimate destruction should it choose to initiate hostilities.

Unfortunately, the current SALT II guidelines fail to offer the prospect of an agreement on the qualitative aspects of strategic armaments of the type required to preserve the sufficiency of US strategic forces. Hence, the United States must not enter into an agreement which would foreclose options which would permit the future acquisition of a long-range "strategic" cruise missile. To this end only a limited ban (5 years) on the development of "strategic" cruise missiles should be considered. Such a ban should include air, sea, and land launch cruise missiles with ranges over 1500 to 2000 NM and include a clause which, also, restricts cruise missiles by volume in order

to provide some measure of assurance against cheating. Moreover, future negotiated limitations on "strategic" cruise missiles should be contingent on the degree of success in restricting those qualitative aspects which threaten the assured retaliatory capability of both the United States and the USSR. On the other hand, restrictions on cruise missiles of lesser ranges should not be an integral part of a SALT agreement, as is currently contemplated, but rather should be reserved for theater level arms control negotiations.

ENDNOTES

1. A cruise missile is an unmanned, self-propelled, winged-projectile capable of flying through the atmosphere in a nonballistic trajectory assisted by aerodynamic lift much like a manned aircraft. Cruise missiles can be armed with either conventional or nuclear warheads and sustain flight through the use of an "air breathing" engine.

2. The SNARK was designed to carry a nuclear warhead at near sonic speeds at altitudes above 50,000 feet over intercontinental distances up to 5,500 nautical miles.

3. The SNARK, for example, was 67.2 feet long and had a wing span of 42.2 feet.

4. Current NAVAIR estimates place the average unit flyaway cost for the General Dynamics strategic cruise missile at approximately \$600 thousand (exclusive of warhead costs). See Captain Walter M. Locke, *Statement of the Project Manager for Tomahawk Cruise Missile Project before the Committee on Armed Services*, US Senate, March 17, 1976, p. 6230.

5. See Malcolm R. Currie, *Statement of the Director, Defense Research and Engineering before the Committee on Armed Services*, US Senate, February 5, 1976, pp. 2099-2100.

6. See Statements of Robert N. Parker, former Principal Deputy Director of Defense, Research and Engineering; Rear Admiral Robert H. Blount, Director, Undersea and Strategic Development Warfare Division, USN; Captain Walter M. Locke, Project Manager for Tomahawk Cruise Missile Project, USN; Dr. Walter B. LaBerge, Assistant Secretary of the Air Force, Research and Development; Brigadier General Charles F. G. Kuyk, Jr., Deputy of Operations Requirements, DCN/R&D, USAF; and Colonel Charles A. MacIvor, Director, ALCM Systems Program Office, USAF in *Fiscal Year 1977 Authorization for Military Procurement, Research and Development, and Active Duty, Selected Reserve and Civilian Personnel Strengths, Hearings before the Committee on Armed Services*, US Senate, March 17, 1976, pp. 6127-6249.

7. Malcolm R. Currie, *Statement of the Director, Defense Research and Engineering before the Committee on Armed Services*, US Senate, April 10, 1975, p. 5180.

8. For a more detailed presentation of some of the opposing arguments see "The Cruise Missile: A Weapon In Search of a Mission," *The Defense Monitor*, September 1976; Townsend Hoopes, "There Is No Objective Need for the Cruise Missile," *The New York Times*, December 30, 1975, p. 25; Thomas A. Halsted, "Should We Deploy Cruise Missiles?" *Baltimore Sun*, January 17, 1976, p. 12; Kosta Tsipis, "The Long-Range Cruise Missile," *Bulletin of the Atomic Scientists*, April 1975; Alexander R. Vershbow, "The Cruise Missile: The End of Arms Control?" *Foreign Affairs*, October 1976.

9. Hoopes, p. 2.

10. Halsted, p. 12.

11. *Ibid.*

12. Malcolm R. Currie, *Statement of the Director, Defense Research and Engineering before the Committee on Armed Services*, US Senate, February 5, 1976, p. III-26.

13. National Technical Means is generally understood to mean satellite or other means normally employed by one country to determine the state of the military forces of another.

14. It is argued that it is impossible to determine the range of a given version by observing test flights because a cruise missile test vehicle need not be tested a full range to determine its accuracy. Accuracy is a function of the most recent update of the guidance package.

15. Halsted, p. 12.

16. See *Ibid.*

17. During the air offensive against North Vietnam just prior to the peace settlement in Vietnam the United States launched B-52 operating ECM equipment against some of the most heavily defended targets in the history of air warfare. The loss rate to SAM's was less than 3 percent.

18. According to Ira C. Eaker, bombers deliver 75 percent of our total megatonage. See Ira C. Eaker, "The Attempt to Kill the B-1," *Air Force Times*, June 21, 1976, p. 17.

19. While the exact range of the two versions of the cruise missile (the air launched (ALCM) and sea launched (SLCM) cruise missiles) is classified, the range of the ALCM has been estimated to be approximately 600 nautical miles and the range of the SLCM about 2,000 nautical miles. See "Tomahawk Clears Crucial Test," *Aviation Week and Space Technology*, November 22, 1976, p. 15.

20. On the other hand, if deployed in a fixed mode, strategic cruise missiles would be at least as vulnerable to a Soviet counterforce first strike as our present generation of ICBM's.

21. In a Congressional Research Issue Brief, Al Tinajero put the range of the SLCM at 300 nautical miles with a 1000 pound warhead and 1200 nautical miles with 200-kiloton yield nuclear warhead. A. A. Tinajero, "Cruise Missiles: US Sea Launched and Air Launched," *Issue Brief Number IB76018*, p. CRS-2.

22. Under the terms of the ABM Treaty and the Protocol to the Treaty signed in Warsaw July 3, 1974, the Soviet Union and the United States are restricted to one antiballistic missile launch site of not more than 100 launchers. As a result, the successful penetration of ballistic missiles is virtually assured, whereas cruise missiles would be required to penetrate the very formidable Soviet surface-to-air missile (SAM) defense network enroute to target.

23. On December 23, 1974, Dr. Malcolm Currie, then Director of Defense Research and Engineering, submitted the "Joint Strategic Bomber Study," a classified report, to the Appropriations and Armed Services Committee of Congress. Given the nature of the Soviet threat and Soviet defenses, the study apparently concluded that it was cost-effective to procure the B-1, in lieu of either a standoff missile carrier or modification of the current B-52 fleet. See Senator Barry Goldwater, *Congressional Record*, May 10, 1976, pp. S6719-S6725. A competing analysis entitled, "Modernizing the Strategic Bomber Force" published by the Brookings Institution concluded that the purchase of a standoff cruise missile carrier could shave \$10 billion to \$15 billion of the first 10-year costs associated with the B-1. This study, however, did not include the cost of a totally new standoff aircraft designed for rapid takeoff and safe escape.

24. See "The Cruise Missile: A Weapon in Search of a Mission," *The Defense Monitor*, p. 6; Tinajero, p. 6; and Halsted, p. 12.

25. The requirement to retarget is perhaps the single most significant obstacle

to the use of cruise missiles as a strategic reserve. The current generation strategic cruise missiles will depend on a terrain contour matching system (TERCOM's) for guidance to the target. Such a system requires the construction of accurate digital maps depicting time independent terrain features, which are then inserted electronically into the missile guidance system. (For an excellent description of TERCOM's see Kosta Tsipis, "The Long-Range Cruise Missile," *Bulletin of Atomic Scientists*, pp. 22-23). For a cruise missile force to function as a strategic reserve, digital TERCOM maps would have to be created for all or most all current ICBM, bomber, and SLBM targets.

26. See Henry S. Bradsher, "US Rejects Soviet Bid to Ban Cruise Missiles," *Washington Star*, September 17, 1975, p. 3.

27. See Locke, *Statement Before the Committee on Armed Services*, p. 6208.

28. In an article which appeared in the *Scientific American* Kosta Tsipis underscores this notion, but contends that limitations on cruise missiles can be verified by some combinations of volume, engine type and thrust. See Kosta Tsipis, "Cruise Missiles," *Scientific American*, February 1977, p. 29. While volume might be of value as a limiting factor, the type of engine used and its thrust seem to be of questionable utility. The range of a particular weapons system is, in part, a function of thrust versus payload. A tactical cruise missile with sufficient thrust to deliver a 1000 pound warhead 600 miles might be able to deliver a 200 kt weapon to distances many times more than that. Likewise, a cruise missile limitation based on type of engine (Tsipis suggests considering all turbojet engines as "strategic" and therefore subject to limitation), might unduly restrict high altitude long-range reconnaissance drones and RPU for which turbojet engines might clearly be cost effective.

29. The NATO guidelines area (NGA) consists of Czechoslovakia, Poland, East Germany, West Germany, Belgium, Luxemburg, and the Netherlands. The NGA is currently the subject of negotiations on the mutual reduction of forces in Central Europe.

SELECTED BIBLIOGRAPHY

- Bates, Asa, Jr., Colonel. "The Cruise Missile Crisis." *The Retired Officer*, October 1976, pp. 28-32.
- Bradsher, Henry S. "The Cruise Missile and Why It Has SALT II Paralyzed." *Washington Star*, November 22, 1975, p. 1.
- Bradsher, Henry S. "U.S. Rejects Soviet Bid to Ban Cruise Missiles." *Washington Star*, September 17, 1975, p. 3.
- Burt, Richard. "The Cruise Missile and Arms Control." *Survival*, January/February 1976, pp. 10-17.
- Conine, Ernest. "The Cruise Missile: Really a Nightmare?" *Los Angeles Times*, February 6, 1976, p. 5.
- Currie, Malcolm R. *Statement of the Director, Defense Research and Engineering before the Committee on Armed Services*. US Senate, February 5, 1976.
- Currie, Malcolm R. *Statement of the Director, Defense Research and Engineering before the Committee on Armed Services*. US Senate, April 10, 1975.
- Eaker, Ira C. "The Attempt to Kill the B-1." *Air Force Times*, June 21, 1976, p. 17.
- Goldwater, Barry, Senator. *Congressional Record*, US Senate, May 10, 1976, pp. S6719-S6725.
- Halsted, Thomas A. and Rowen, Henry S. "Should We Deploy Cruise Missiles?" *Baltimore Sun*, January 17, 1976, p. 12.
- Hoopers, Townsend. "There is No Objective Need for the Cruise Missile." *The New York Times*, December 30, 1975, p. 25.
- Locke, Captain Walter M. *Statement of the Project Manager for Tomahawk Cruise Missile Project before the Committee on Armed Services*. US Senate, March 17, 1976.
- Parker, Robert N. *Statement of Principal Deputy Director of Defense Research and Engineering before the Committee on Armed Services*. US Senate, March 17, 1976.
- Shapley, Deborah. "Cruise Missiles: Air Force, Navy Weapon Poses New Arms Issues." *Science*, February 7, 1975, pp. 416-418.
- Smith, Kingsbury. "NATO Fears U.S. Bargaining Over Cruise Missiles." *Baltimore News-American*, October 10, 1975, p. 2.
- "The Cruise Missile: A Weapon in Search of a Mission." *The Defense Monitor*, September 1976.
- Tinajero, A. A. "Cruise Missiles: US Sea Launched and Air Launched." *The Library of Congress Issue Brief Number 1B76018*. Washington, DC: The Library of Congress, March 18, 1976.
- "Tomahawk Clears Crucial Test." *Aviation Week and Space Technology*, November 22, 1976, pp. 14-16.
- Tsipis, Kosta. "Cruise Missiles." *Scientific American*, February 1977, pp. 20-29.
- Tsipis, Kosta. "The Long-Range Cruise Missile." *The Bulletin of Atomic Scientists*, April 1975, pp. 15-16.
- Vershow, Alexander R. "The Cruise Missile: The End of Arms Control?" *Foreign Affairs*, October 1976, pp. 133-146.
- Weiler, Lawrence. "Strategic Cruise Missiles and the Future of SALT." *Arms Control Today*, October 1975.

OTHER RECENTLY PUBLISHED MEMORANDA

Detente, National Security, and Multinational Corporations	AD A013014
Nonconsonant Detente and NATO	AD A013522
Deterrence and Detente	AD A013979
The Impact of Crises on the Evolution of Strategy and Forces in an Era of Detente	AD A014158
The Terror Trap	AD A014159
Collective Defense, Neutralization, and the Balance of Power: Contending Security Policies in Southeast Asia	AD A015464
Precision Guided Munitions: Implications for Detente	AD A015465
Chile, 1964-74: The Successes and Failures of Reformism	AD A015466
International Leadership in an Era of Detente	AD A015467
Detente and the Eastern Mediterranean	AD A016859
Terrorism and the Military Response	AD A016860
The Prospects of Soviet American Alliance	AD A016884
A Fifth Round in the Middle East? Western European Perceptions	AD A017049
Nuclear Strategy for Defending a Border	AD A017050
Being Number One Nation: Primacy and Detente	AD A017794
Interests and Strategies in an Era of Detente: An Overview	AD A019091
The Relevance of Civilian Based Defense to US Security Interests	AD A020178

Copies of any of these memoranda may be obtained from the Defense Documentation Center. The request, indicating title and AD number, should be sent to the following address:

Defense Documentation Center
Cameron Station
Alexandria, VA 22314

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER ACN 78018 ✓	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) THE CRUISE MISSILE AND THE STRATEGIC BALANCE		5. TYPE OF REPORT OR DOCUMENT COVERED Military issues Research memo
6. AUTHOR(s) Robert Kennedy	8. CONTRACT OR GRANT NUMBER(s)	
7. PERFORMING ORGANIZATION NAME AND ADDRESS Strategic Studies Institute ✓ US Army War College Carlisle Barracks, PA 17013		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. SECURITY CLASS. (of Report) UNCLASSIFIED DECLASSIFICATION/DOWNGRADING SCHEDULE
13. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		14. SECURITY CLASS. (of Abstract) UNCLASSIFIED DECLASSIFICATION/DOWNGRADING SCHEDULE
15. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Strategic Balance, Cruise Missiles, SALT, Strategic Armaments, Theater Nuclear Forces, ICBMs, Bombers, SLEMs		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The phenomenal growth of Soviet military power over the past two decades and concurrent perceptions of a decline in the ability of the United States to exercise the degree of influence on world events it did during the immediate postwar era have generated concerns over the worldwide balance of power. The continued qualitative improvements in Soviet ICBM forces, coupled with the quantitative edge offered the USSR through SALT I, seem to presage an imminent increase in the vulnerability of current generation US Ballistic missile and bomber forces and threaten to undermine the basis upon which		

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

(CONT'D)

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

-A-
390 230

alt over

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

20. (CONTD)

US-USSR strategic stability has come to rest. Moreover, US theater, sea control, and power projection forces are becoming increasingly more vulnerable to Soviet conventional, tactical nuclear, and naval force improvements.

To partially offset recent Soviet improvements it has been suggested that the United States embark on a vigorous program to develop cruise missiles. It has been argued that such a program not only would offer the promise of providing the United States with an inexpensive, invulnerable strategic nuclear reserve force which would preserve a strong measure of stability at the strategic nuclear level, but also would provide a means of offsetting Soviet conventional, theater nuclear, and naval gains. Opponents, however, contend that the acquisition of cruise missiles is likely to be highly destabilizing and might, in the long term, be disadvantageous to the United States.

What has been absent from both sides of the discussion has been a clear delineation of the criteria upon which the acquisition of such a system should be based. When criteria such as sufficiency, stability, cost and the impact on regional, theater, and sea control forces are considered, it becomes evident that while there is no immediate need for a long-range "strategic" version of the cruise missile, shorter range tactical nuclear and conventional versions promise to be highly valuable. Moreover, despite the current lack of need for long-range cruise missiles, the United States should not foreclose on options to produce such missiles in the future. Should arms control and disarmament agreements fail to preserve a clear measure of mutual invulnerability of strategic retaliatory forces, it may be necessary to pursue the development of longer range, strategic versions in the future.

To such ends the United States should pursue a limited ban (five years) on strategic cruise missiles. Such a ban should include air, sea, and land launched cruise missiles with ranges over 1500 to 2000 nautical miles.

- B -
UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)